

## Chemical Compatibility Chart for Apparel

Average Breakthrough Time (minutes) - Average time between contact of chemical on outside of material surface and detection of chemical on inside surface. Industrial chemical breakthrough times are normalized to a permeation rate of 0.1 ug/cm<sup>2</sup>/min in accordance with ASTM F 739-91.

Chemical agents are tested in accordance with Military Standard MIL-STD-282.

**Caution:** This test data is derived from tests performed on fabric samples only; not finished garments, seams, or component parts.

| Chemical                          | Average Breakthrough Time (in minutes) |       |       |       |       |
|-----------------------------------|--|-------|-------|-------|-------|
|                                   | Tyvek QC®                              | CPF®1 | CPF®2 | CPF®3 | CPF®4 |
| Acetic Acid, 100%                 | NT                                     | NT    | >480  | 84    | >480  |
| Acetone, 100%                     | <1                                     | <4    | 12    | >480  | >480  |
| Acetonitrile, 100%                | <1                                     | <4    | 42    | 7     | >480  |
| Allyl chloride, 99%               | NT                                     | NT    | 7     | 12    | >480  |
| Benzene, 99%                      | NT                                     | NT    | 36    | >480  | >480  |
| Carbon disulfide, 98%             | <1                                     | <4    | <4    | 16    | >480  |
| Chlorine gas, 100%                | NT                                     | NT    | >480  | >480  | NT    |
| Chlorine liquid, 99%              | NT                                     | NT    | NT    | >480  | >480  |
| Chloroacetic acid, 70-80%         | NT                                     | NT    | NT    | NT    | NT    |
| Chromic acid, saturated           | NT                                     | NT    | >480  | NT    | NT    |
| Cresols, 100%                     | NT                                     | NT    | >480  | NT    | NT    |
| Diazinon, 25%                     | NT                                     | NT    | >480  | NT    | NT    |
| Dichloromethane, 100%             | <1                                     | <4    | <4    | 7     | 114   |
| Dichlorotoluene, mixture          | NT                                     | NT    | NT    | >480  | NT    |
| Diethylamine, 98%                 | <1                                     | <4    | 14    | >480  | >480  |
| Dimethylformamide, 100%           | 7                                      | 25    | 95    | >480  | >480  |
| Epichlorohydrin, 99%              | NT                                     | NT    | NT    | 67    | >480  |
| Ethyl acetate, 100%               | <1                                     | <4    | 28    | >480  | >480  |
| Ethyl alcohol, 100%               | NT                                     | NT    | NT    | >480  | >480  |
| Ethylene glycol, 99%              | NT                                     | >480  | NT    | NT    | NT    |
| Ethylene oxide gas, 100%          | NT                                     | NT    | NT    | >480  | 305   |
| Formaldehyde, 37%                 | NT                                     | NT    | >480  | >480  | >480  |
| Formic acid, 96%                  | NT                                     | NT    | >480  | NT    | NT    |
| Glutaraldehyde, 50%               | NT                                     | >480  | >480  | NT    | NT    |
| Hexane, 95%                       | <1                                     | <4    | 10    | >480  | >480  |
| Hydrazine, 98%                    | NT                                     | NT    | 437   | NT    | >480  |
| Hydrochloric acid, 37%            | NT                                     | 90    | >480  | >480  | >480  |
| Hydrofluoric acid, 48%            | NT                                     | >480  | >480  | 180   | >480  |
| Hydrogen cyanide, 98%             | NT                                     | NT    | NT    | 30    | >480  |
| Hydrogen peroxide, 30%            | NT                                     | NT    | NT    | >480  | NT    |
| Isoamyl alcohol, 99%              | NT                                     | NT    | >480  | NT    | NT    |
| Jet fuel A, mixture               | NT                                     | NT    | >480  | NT    | NT    |
| Malathion, 50%                    | NT                                     | NT    | >480  | NT    | NT    |
| Methanol, 100%                    | <1                                     | 5     | >480  | 8     | >480  |
| Methyl ethyl ketone, 99%          | NT                                     | NT    | 10    | >480  | >480  |
| Nitric acid, 70%                  | NT                                     | >480  | >480  | NT    | >480  |
| Nitrobenzene, 99%                 | <1                                     | 5     | 205   | >480  | >480  |
| Oleum, 27-33 free SO <sub>3</sub> | NT                                     | NT    | 450   | NT    | NT    |
| Oleum, 65 free SO <sub>3</sub>    | NT                                     | NT    | NT    | 15    | >480  |
| PCB, 50%                          | NT                                     | NT    | >480  | >480  | >480  |
| Phenol, 85%                       | NT                                     | NT    | >480  | 85    | >480  |
| Phosphoric acid, 85%              | NT                                     | >480  | >480  | NT    | NT    |
| Sodium cyanide, 95%               | NT                                     | NT    | NT    | 15    | NT    |
| Sodium hydroxide, 50%             | >480                                   | >480  | >480  | >480  | >480  |
| Sodium hypochlorite, 5.25%        | NT                                     | NT    | >480  | >480  | NT    |
| Stoddard solvent, 99%             | NT                                     | NT    | NT    | NT    | >480  |
| Styrene, 99%                      | NT                                     | NT    | 12    | >480  | >480  |
| Sulfuric acid, 96%                | >480                                   | >480  | >480  | >480  | >480  |
| Tetrachloroethylene, 100%         | <1                                     | <4    | 10    | >480  | >480  |
| Tetrahydrofuran, 100%             | <1                                     | <4    | <4    | >480  | >480  |
| Titanium tetrachloride, 99%       | NT                                     | NT    | 15    | 120   | NT    |
| Toluene, 100%                     | <1                                     | 8     | 4     | >480  | >480  |
| Trichloroethane, 99%              | NT                                     | NT    | NT    | >480  | >480  |
| Vinyl chloride, 100%              | NT                                     | NT    | >480  | >480  | NT    |
| Xylene O, 99%                     | NT                                     | NT    | NT    | >480  | >480  |

NT=Not tested

Tyvek QC® test data obtained from E.I. DuPont's Technical Data Sheets, effective May 1, 1994  
CPF® 1, 2, 3, 4 test data obtained from Kappler Suit Smart Selection Guide

### ⚠ WARNING

The information in this chart was supplied to Cole-Parmer by other reputable sources and is to be used **ONLY** as a guide in selecting apparel for chemical compatibility testing. Variability in material thickness, chemical concentration, temperature, and length of exposure to chemicals will affect specific performance.

Always test the products with the specific chemicals and under the specific conditions of your application. Cole-Parmer does not warrant (neither expressed nor implied) the accuracy or completeness of this chart or that any material is suitable for any purpose.

## DU PONT CPF® 1 Coveralls

Coveralls feature a multilayer barrier film laminated to a durable polypropylene substrate to provide increased physical strength and splash resistance. Seams are serged. Use coveralls for protection from dry particulates and light splash. Coveralls have a zipper front and open collar; coveralls with hood have a zipper front, attached hood, and elastic wrists and ankles.



### Ideal for:

- ▶ Acid handling
- ▶ Tank cleaning
- ▶ Mixing chemicals
- ▶ Oil refining

86222-01

| Description         | Catalog number             |            |            | Price |
|---------------------|----------------------------|------------|------------|-------|
|                     | Medium                     | Large      | X-large    |       |
| Coveralls           | <a href="#">A-86222-01</a> | A-86222-02 | A-86222-03 |       |
| Coveralls with hood | <a href="#">A-86222-11</a> | A-86222-12 | A-86222-13 |       |

## DU PONT CPF® 2 Coveralls

These coveralls offer excellent tear and chemical resistance. They feature a layer of barrier film that is laminated to a tough 1.5-oz polypropylene substrate. Coveralls have bound seams, a zipper front and open collar; coveralls with hood have bound seams, a zipper front, attached hood, and elastic wrists and ankles.



### Ideal for:

- ▶ Chemical exposure
- ▶ Utilities
- ▶ PCB cleanup
- ▶ Hazmat remediation

86222-21

| Description         | Catalog number             |            |            | Price |
|---------------------|----------------------------|------------|------------|-------|
|                     | Medium                     | Large      | X-large    |       |
| Coveralls           | <a href="#">A-86222-21</a> | A-86222-22 | A-86222-23 |       |
| Coveralls with hood | <a href="#">A-86222-31</a> | A-86222-32 | A-86222-33 |       |